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08/859, 960 05/21/97 TOLT

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 EXAMINER

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| ART UNIT | PAPER NUMBER |
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1765

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UNITED STATES DEPARTMENT OF COMMERCE  
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 11

Application Number: 08/859,960

Filing Date: May 21, 1997

Appellant(s): Tolt et al

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Kelly K. Kordzik  
For Appellant

**EXAMINER'S ANSWER**

This is in response to appellant's brief on appeal filed September 10, 1999.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

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A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

No amendment after final has been filed.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because the separate groups contain same claims and the groupings do not include all pending claims.

**(8) *ClaimsAppealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

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|           |                |         |
|-----------|----------------|---------|
| 5,696,385 | Song et al     | 12-1997 |
| 5,759,080 | Yoshioka et al | 6-1998  |

**(10) *Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 to 3, 10 to 12, 14 to 19 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al..

The Song et al. reference teaches a field emitter and a method of manufacturing one. On a substrate, of metal or ceramic, a patterned metal layer is formed with exposed substrate openings. A continuous layer of carbon is then deposited on to the patterned layer and substrate. The remainder of the device is then made. The carbon deposited on to the substrate is used as the active area, note figures. The sole difference between the instant claims and the prior art is the carbon being more of an emitter on the substrate. However, in the absence of unobvious results, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum, operable area that the carbon film is more active, it is noted, that the reference uses the carbon on the substrate as the active area indicating to one of ordinary skill in the art the area of higher activity.

Claims 4 to 9, 13, and 20 to 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. in view of Yoshioka et al..

The Song et al. reference is relied on for the same reasons as stated, *supra*, and differs from the instant claims in the means of changing substrate morphology. However, the Yoshioka

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et al reference teaches creating a field emitter using carbon layers by etching with acids and patterning , note, col. 13. It would have been obvious to one of ordinary skill in the art to modify the Song et al reference by the teachings of the Yoshioka et al reference to pattern etch in order to create the desired emitter areas and devices.

***(11) Response to Argument***

Appellants' argument concerning claims 1, 4, 14, 21, 23, 24, 25 and 36 is noted. However, the claims are not as limited as argued. The change in the substrate can be done by depositing and patterning another layer prior to carbon layer formation (\*see claim 12 and the instant specification) . This is an embodiment set forth by the appellants. In this embodiment the specification states using conventional patterning and etching techniques to roughen or change the morphology of the substrate. The prior art etches and patterns in a manner which is encompassed by the instant specification. Therefore, the prior art inherently preforms the same thing. It is also, noted that etching does not evenly remove and thus the substrate in the prior art would be effective by the etchant materials as all the metal in the patterned area is removed. The etchant remains until all the metal desired is removed. Thus, the Song et al reference does in fact encompass the instantly claimed invention. The prior art clearly sets forth a substrate with a patterned layer then a carbon layer. Since, the structure is the same the result would inherently be the same. There is no evidence that the results would be different as the structure and process of the Song et al reference clearly meets the limitations and embodiments encompassed in the above claims.

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Appellants' argument concerning the reasons for inherency has been considered and not deemed persuasive. The examiner has set forth a reason as to why the process and product of the instant invention is inherently taught by the Song et al reference. The reference teaches using a process which is encompassed by one of the embodiments set forth by appellants and which is stated as using conventional etchants and methods. Therefore, the examiner has met the requirements set forth in the MPEP 2112. The cited sections then states that the burden is on appellants to show that there is no inherency. Appellants have not submitted any evidence or reasons as to why the reference does not inherently change the morphology of the substrate.

Appellants' argument concerning the growth of carbon is noted. However, the claims do not exclude the use of the ballast material of the Song et al reference. The emitter of the Song et al reference is formed over the patterned opening as set forth by the claims. Further, the change in the substrate would in fact propagate to the ballast material and thus effect the carbon emitter. The Song et al reference does clearly met the instant claims.

As shown in the above arguments and rejections, the Song et al reference does in fact render the claimed invention obvious to one of ordinary skill in the art. The sole missing limitation from the reference as been clearly shown as a limitation which is inherently met by the teachings of the Song et al reference.

Appellants' argument concerning claim 9 has been considered and not deemed persuasive. The references do teach roughen the substrate prior to the carbon film deposition. Sonication is a another art conventional step to roughen or treat a substrate prior to carbon film growth.

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Appellants' argument concerning claims 12 and 18 is noted. The claims merely recite growth on the lower layers and are open. This clearly allows for an intervening layer such as a ballast layer. Therefore, the prior art does in fact meet the limitations set forth in the above claims.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

  
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RMK  
November 19, 1999

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